Applicant: Coach Wei, et al.

U.S.S.N.: 10/017,183 Filing Date: 12/07/2001

EMC Docket No.: EMC-06-235(PRO)ORD1

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the

Application.

Listing of Claims:

(Previously presented) A method for delivering an application over a network from a

backend server to a plurality of client devices, at least two of the client devices differing in type

and display capabilities, the method comprising the steps of:

receiving a request from a client and determining a type of the client;

having the application invoke a Graphic User Interface (GUI) Application Programming

Interface (API) to present the application's user interface;

in response to the type of the client, replacing the GUI API with a re-implemented,

network aware GUI API comprising a User Interface (UI) record, the UI record comprising pre-

determined format based messages that describe the Graphical User Interface, event processing

registries, and other related information corresponding to a presentation layer of the application

in high level, object level, messages;

sending such messages to the client device via the network;

processing the messages in the UI record and rendering a user interface by a client-side

program operating at the client, which delivers a user experience for that device according to the

display capability of the client;

rendering the user interface on the client device;

transmitting a plurality of necessary user input and a plurality of client-side events back

to the server via a predetermined protocol;

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processing the user input and client-side events on the backend server, translating the

events and inputs as if they were locally generated, and sending such translated events and inputs

to the application for processing;

encoding and routing output of the application to the client device using the

predetermined messaging format; and,

further processing the output by the client-side program to refresh the Graphical User

Interface;

wherein use of the re-implemented network aware API enables the application and GUI

API to be developed once and deployed multiple times for use by multiple different types of

client devices.

2. (Previously presented) The method of Claim 1, wherein the GUI API and the event

processing API are represented as classes within Java Foundation Classes.

3. (Previously presented) The method of Claim 1, wherein the client-side program is a

computer program based on an Operating System's API.

4. (Previously presented) The method of Claim 1, wherein the client-side program is a

wireless device program written using the device's Operating System's API.

5. (Previously presented) The method of Claim 1, wherein the client-side program is a

program written using a Java API.

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 $6. \qquad \hbox{(Previously presented)} \quad \hbox{The method of Claim 5, wherein the JAVA API is selected from}$ 

the groups consisting of ; Abstract Windows Toolkit (AWT), Personal Java, Java 2 Micro

Edition based GUI API or Java Swing.

7. (Previously presented) The method of Claim 1, wherein the predetermined protocol is

Hyper Text Transfer Protocol HTTP.

8. (Previously presented) The method of Claim 1, wherein the predetermined protocol is

Hyper Text Transfer Protocol over Secure Socket Laver (HTTPS).

9. (Previously Presented) The method of Claim 1, wherein predetermined protocol is

Wireless Application Protocol (WAP).

10. (Original) The method of Claim 1, wherein predetermined protocol is proprietary.

11. (Previously presented) The method of Claim 1, wherein the predetermined messaging

format is based on Extended Markup Language (XML).

12. (Previously presented) The method of Claim 1, wherein the predetermined messaging

format is proprietary.

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13. (Original) The method of Claim 1, wherein the network is the Internet.

14. (Original) The method of Claim 1, wherein the network is a local area network.

15. (Original) The method of Claim 8, wherein the local area network is a bandwidth-

limited slow speed network.

16. (Original) The method of Claim 1, wherein the network includes a wireless network.

17. (Previously presented) The method of Claim 11, wherein the client device is selected

from the group consisting of workstations, desktops, laptops, Personal Data Assistants (PDAs),

and wireless devices.

18. (Original) The method of Claim 1, wherein the server and the client device are

combined into one entity.

19. (Cancelled)

(Cancelled)

21. (Cancelled)

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22. (Previously presented) A system for distributing an application to a plurality of client devices

having different display capabilities includes at least a server, at least a client device, and a

communication means, the system comprising:

a presentation layer of the application written using a server-side API based network

programming model;

a business logic layer of the application and a data layer of the application both of which

are written with the server-side API and running on the server; and where

the server-side API having a supporting infrastructure that:

sends different User Interface (UI) records comprising information associated

with the application's user interface information to the plurality of client devices, each UI

record modifying the application's user interface according to the display capabilities of

the respective client to enable display of a modified version of the application's user

interface by the respective client;

handles communications problems,

renders the application's user interface.

dispatches necessary user input events back to the server for processing; and

wherein use of the system enables the application and application user interface to be

developed once and deployed multiple times by different types of client devices.

23. (Previously presented) An apparatus for distributing an application over a network to a

plurality of client devices, where the apparatus includes:

a server;

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a network communication means;

a storage device for storing, for each client device of the plurality of client devices, a

User Interface (UI) record associated with a re-implemented, network based API module that is

used to transparently replace the API on which the application was developed and is customized

according to display capabilities of the respective client device;

a first means for running an application of the plurality of applications where a business

logic of the application runs on the server;

a second means for forwarding a given UI record to a client in response to a launch of the

display the application interface on the client device in accordance with display capabilities of

the client device;

a third means for transferring the user interactions on the client device to the server,

calculating the appropriate response to the input, and transmitting the appropriate response to the

client machine:

fourth means for updating the display of the application on the client device based on the

responses from the server:

wherein use of the re-implemented network aware API enables the application and

application interface to be developed once and deployed multiple times on different client

devices having different display capabilities.

24. (Previously presented) The method of Claim 1 wherein the application code is not modified

when distributing the application and the application code is not distributed to the client device.

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 $25. \ (Previously\ presented)\ The\ method\ of\ Claim\ 1\ used\ to\ distribute\ a\ plurality\ of\ pre-existing$ 

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